

Lipid Storage in White Adipocytes

Lipoprotein
Lipase

- Located on surface of endothelial cells, breaks lipids into fatty acids and glycerol. Adipocytes take fatty acids and complex with glycerol to form triglycerides.

Hormone
Sensitive Lipase

- Releases stored lipids. Breaks triglycerides into fatty acids which then complex with albumin in blood for transport.

Leptin

- Protein produced by adipocyte that targets the hypothalamus. Results in decreased food intake and increased energy consumption.

Insulin

- Acts on adipocytes to form triglycerides from glucose, increase uptake of glucose, and increase production of lipoprotein lipase.

Collagen Formation

rER

- Transcription of α -chains in nucleus.

Procollagen
Peptidase

- Translation occurs. Hydroxylation of proline and lysine. α -chains assemble to form procollagen. Secreted out of cell by Golgi.

Lysyl Oxidase

- After secretion by Golgi the procollagen molecules are cleaved and converted to tropocollagen outside the cell

Fibrils assemble into
fibers, fibers to
fascicles

- Hydroxylysine molecules covalently attached to form fibrils.

Heat Generation in Brown Adipocytes

Fatty Acid
Accumulation

- Numerous mitochondria in cell create a large $[H^+]$ gradient.

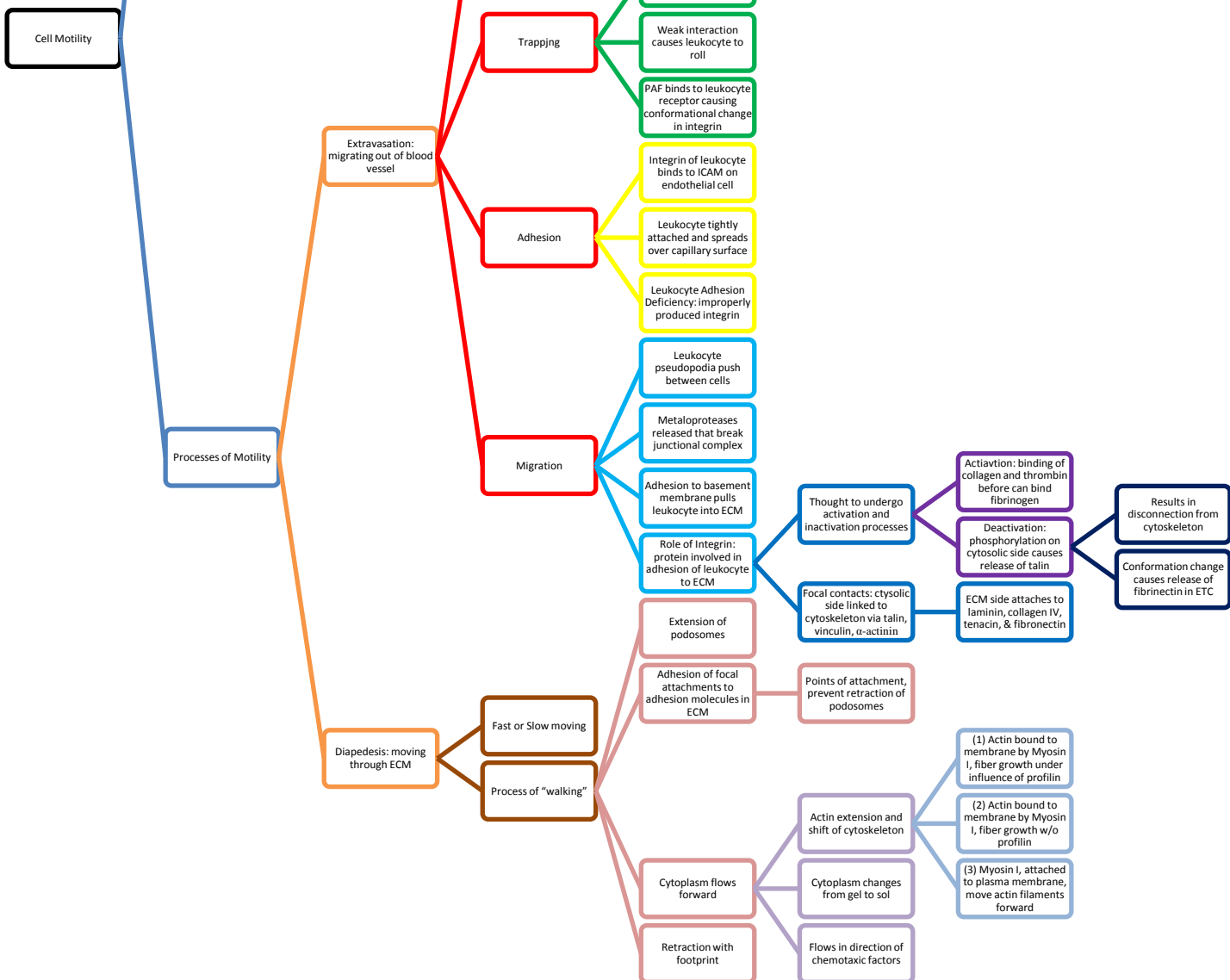
Thermogenin

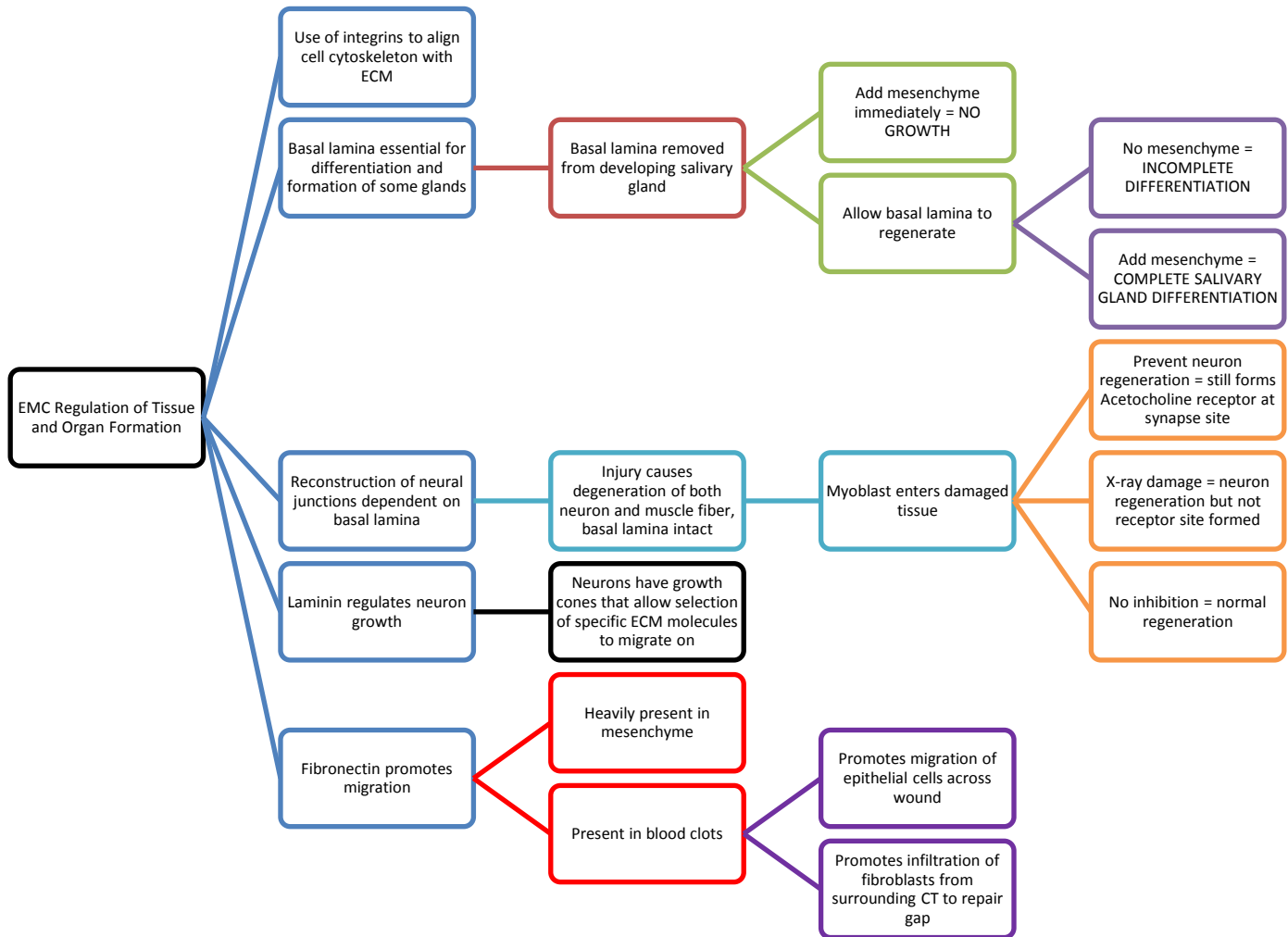
- Uncoupling proteins located in the inner mitochondrial membrane allow H^+ to flow back into cell

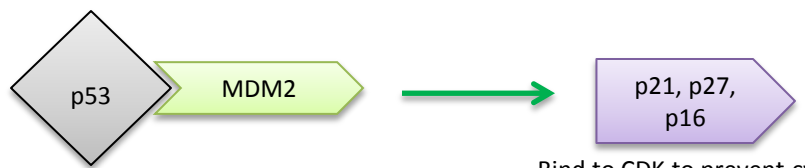
Heat
Generation

- Flow of protons down concentration gradient

Formation of Elastic Fibers goes through same process as Collagen, but replace procollagen with **proelastin** and tropocollagen with **tropoelastin**.







MDM2 sequesters p53 for proteosomal degradation. DNA damage causes phosphorylation of p53 and dissociation from MDM2 to activate p21.

Bind to CDK to prevent cyclin-CDK complex from forming



Phosphorylate Rb to allow activation of E2F and S phase gene transcription



Blocks activation of E2F and prevents transcription of S phase genes (Restriction Point)



Prophase

Pro-metaphase

Metaphase

Anaphase

Telophase

M

G₁

G₂

S



Induces G₂/M transition



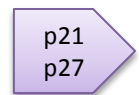
Induces G₂ phase



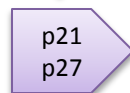
Induces S phase



Promotes the G₁/S transition



Produced in response to DNA Damage/incomplete replication



Produced in response to DNA Damage

